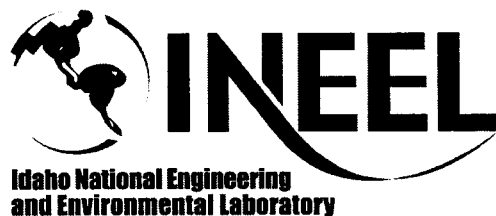


Technical and Functional Requirements

WAG 3 INEEL CERCLA Disposal Facility and Evaporation Pond

Prepared for:
U.S. Department of Energy
Idaho Operations Office
Idaho Falls, Idaho



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1. INTRODUCTION

The Idaho National Engineering and Environmental Laboratory (INEEL), including the Idaho Nuclear Technology and Engineering Center (INTEC), was placed on the National Priorities List (NPL) in November 1989. A Federal Facility Agreement and Consent Order (FFA/CO) was negotiated with the Environmental Protection Agency (EPA) and the Idaho Department of Health and Welfare (IDHW) to direct the cleanup activities at the INEEL.

A comprehensive study or remedial investigation/baseline risk assessment (RI/BRA) was conducted to determine the nature and extent of soil and groundwater contamination at the INTEC. The results of the RI/BRA activities indicated soil at certain release sites and groundwater contamination pose a potential risk above acceptable levels to human health and the environment. Therefore, the U.S. Department of Energy Idaho Operations Office (DOE-ID) authorized a remedial design/remedial action (RD/RA) for the INTEC in accordance with the Waste Area Group (WAG) 3, Operable Unit (OU) 3-13 Record of Decision (ROD).

The ROD requires contaminated surface soils to be removed and disposed of on-Site in the INEEL Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Disposal Facility (ICDF). These soils may be low-level, hazardous, or mixed. The ICDF will be located southwest of INTEC. The ICDF will be an engineered facility meeting DOE Order 435.1, Resource Conservation and Recovery Act (RCRA) Subtitle C, Idaho Hazardous Waste Management Act (HWMA), and Toxic Substances Control Act (TSCA) polychlorinated biphenyl (PCB) landfill design and construction requirements.

1.1 INEEL CERCLA Disposal Facility Identification

The ICDF is a low-level, hazardous, TSCA, and mixed waste disposal facility (landfill cell(s) and evaporation pond) with an authorized estimated capacity of 510,000 yd³. The ICDF landfill cell(s) will provide waste disposal capacity for CERCLA-generated contaminated bulk soil, debris (rubble, concrete, wood, personal protective equipment, metals) and CERCLA-treated waste which is generated at the INEEL and meets the agency approved waste acceptance criteria (WAC) for the ICDF. The evaporation pond will provide treatment/disposal capability for CERCLA-generated aqueous wastes. The ICDF can have multiple landfill cells and will be closed with a DOE 435.1/RCRA-compliant cover.

1.2 Limitations of the Technical and Functional Requirements Document

This technical and functional requirements (T&FR) document defines the design requirements for the ICDF to the extent the requirements are known during its development. It is not intended to define analysis or evaluation tasks that may be

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necessary as part of the design activity. Should these analysis efforts identify additional requirements necessary to guide or constrain the design, they will be added to the T&FR document via the program change control process.

1.3 Ownership of the Technical and Functional Requirements Document

The T&FR document is the product of the combined activities of the ICDF project team. The WAG 3 Project Engineer has the ultimate responsibility for the content and approval of the document. Updates to this T&FR will be processed in accordance with the ICDF Project and Bechtel BWXT Idaho, LLC (BBWI) policies and procedures.

1.4 Definitions/Glossary

Component. Item of equipment, such as a pump, valve, or relay, or an element of a larger array, such as computer software, length of pipe, elbow, or reducer.

Hazardous. A "solid waste" identified as hazardous in 40 CFR 261.3. A hazardous waste can be a solid, a liquid, a gas, or a combination of phases. Hazardous waste contains corrosive, ignitable, reactive, or toxic materials but does not contain radioactive components.

Low-level. Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in Section 11e(2) of the Atomic Energy Act, as amended.

Mixed. Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and RCRA, respectively.

Safety Class. A designation applied to SSCs (safety class SSCs) whose failure could adversely affect the environment or safety and health of the public, as identified by safety analyses.

Structure. Elements that provide support or enclosure, such as buildings, freestanding tanks, basins, dikes, and stacks.

System. Collection of components assembled to perform a function, such as heating, ventilating, and air conditioning (HVAC) systems, control systems, utility systems, reactor cooling systems, radiological monitoring systems, or fuel storage systems.

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1.5 Requirement Classification System

Environmental Requirement. A requirement related to the environment and specifically to environmental planning.

Mission-Critical Requirement. A requirement necessary to prevent or mitigate substantial interruptions of facility operations or severe cost or other adverse impacts or those that are necessary to satisfy DOE programmatic mission considerations.

Other Requirement. A requirement that does not fit in the safety class, safety significant, other safety, environmental, or mission-critical classifications.

Other Safety Requirement. A requirement, not identified as safety class or safety significant, but necessary for systems, structures, and components (SSC) to perform functions considered important to overall facility safety and as part of worker safety or the defense-in-depth safety basis for the facility.

Safety Class Requirement. A requirement identified as necessary for a safety class SSC to accomplish its safety function.

Safety Significant. A designation applied to SSCs (safety significant SSCs) not designated as safety class SSCs, but whose preventive or mitigative function is a major contributor to defense-in-depth, such as prevention of uncontrolled material releases and/or worker safety as determined from hazard analysis.

Safety Significant Requirement. A requirement identified as necessary for a safety significant SSC to accomplish its safety function.

1.6 Acronyms

ALARA	as low as reasonably achievable
AOC	area of contamination
ARAR	applicable or relevant and appropriate requirements
BBWI	Bechtel BWXT Idaho, LLC
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CWID	CERCLA Waste Inventory Database
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office

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EDF	engineering design file
EPA	Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
FML	flexible membrane liner
HI	hazard index
HVAC	heating, ventilating, and air conditioning
HWMA	Hazardous Waste Management Act
ICDF	INEEL CERCLA Disposal Facility
IDAPA	Idaho Administrative Procedures Act
IDHW	Idaho Department of Health and Welfare
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
LDRs	land disposal restrictions
MCL	maximum contaminant level
NCP	National Contingency Plan
NPH	natural phenomenon hazard
NPL	National Priorities List
OU	Operable Unit
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action
RI/BRA	remedial investigation/baseline risk assessment
ROD	Record of Decision
SRPA	Snake River Plain Aquifer
SSC	system, structure, and component
SSSTF	Storage, Staging, Sizing, and Treatment Facility
TBD	to be determined
TRU	transuranic
TSCA	Toxic Substances Control Act
T&FR	technical and functional requirements
WAC	waste acceptance criteria
WAG	waste area group

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1.7 Key Assumptions

The OU 3-13 ROD defines the scope of work for the ICDF activities. The following assumptions were created to further clarify and/or define limiting factors and conditions associated with that scope.

ID	Assumption Description
A	The ICDF will not dispose of waste exceeding 10 nCi/g TRU constituents.
B	Periodic sampling of the ICDF leachate will be performed to demonstrate compliance with the evaporation pond WAC.
C	A WAC will be developed establishing requirements for the ICDF disposal cells.
D	A WAC will be developed for the evaporation pond(s).
E	Bulk waste material will go through an administrative and validation process at the SSSTF that includes weighing, profiling, verification, acceptance, quality assurance, and database management before proceeding to the ICDF.
F	Waste originating outside the WAG 3 area of contamination (AOC) shall be treated to comply with the land disposal requirements in Idaho Administrative Procedures Act (IDAPA) 58.01.05.011 (see p. 3-4) (40 Code of Federal Regulations [CFR] 268 and 40 CFR 268.49). Certain waste within the WAG 3 AOC will also need treatment.
G	Waste exceeding specified sizes in the WAC may be accepted by exception, but will require special procedures and authorizations.
H	The leachate collection system will operate to prevent backup into the layer and maintain leachate at allowable levels.
I	A clay layer will be designed and constructed under 100% of the landfill area.
J	The ICDF will operate 10 hours per day and four days per week.
K	The ICDF administrative area will be combined with or be part of the SSSTF.
L	Waste arriving at the ICDF will be limited to one waste profile per container.
M	Waste generators will provide an approved waste profile for each waste stream prior to shipment to the ICDF.
N	Waste will meet the ICDF WAC.
O	Independently generated centralized stand-by power will not be required.
P	ICDF utility connections will be provided by INTEC to the extent practical.
Q	No wastes over 500 ppm organic will be accepted in the pond.
R	The ICDF will be considered an "on-site" facility for the purpose of INEEL CERCLA waste disposal.
S	The ICDF will routinely perform waste placement in yearly campaigns that begin in March and end in November; however, the facility will be operational the remainder of the year. Waste monitoring and management operations will be required year-round.
T	Gas vents in the landfill will not be required.

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2. OVERVIEW

The ICDF Complex will consist of the Storage, Staging, Sizing, and Treatment Facility (SSSTF) and the landfill with its associated evaporation pond and leachate collection system. The landfill will enable the various WAGs from the INEEL to dispose of all CERCLA waste meeting the ICDF WAC. The disposal cells, including a buffer zone, will cover approximately 320,000 m² (80 acres). The ICDF will accept only those wastes generated within INEEL boundaries during CERCLA actions. Other INEEL wastes are not included within the OU 3-13 AOC. Wastes proposed for disposal at the ICDF landfill will include low-level, hazardous, mixed, and limited quantities of TSCA wastes. Most of the waste will be contaminated soil, but wood and debris from sites CPP-92, CPP-98, and CPP-99 and other INEEL CERCLA sites are expected. Acceptance criteria will include restrictions on contaminant concentrations based on groundwater modeling results and the goal of preventing potential future risk to the Snake River Plain Aquifer (SRPA).

INEEL CERCLA waste meeting the SSSTF WAC will arrive at the SSSTF, where the waste profile and verification analysis will be used to show compliance with the profile. The approved profile will determine whether treatment is required before waste is sent to the ICDF. Based on the verification analysis, the waste will then either be sent directly to the ICDF landfill for disposal or will be treated at the SSSTF to meet the ICDF WAC or for off-Site disposal. CERCLA waste originating outside the WAG 3 AOC and wastes from within the WAG 3 AOC that have triggered placement will be treated at the SSSTF to comply with RCRA land disposal restrictions (LDRs) prior to disposal, as necessary.

2.1 INEEL CERCLA Disposal Facility Functions

An ICDF functional block flow diagram is provided in Figure 2.1-1. The diagram defines the major functions and sub-functions of the ICDF and SSSTF as well as defines the flow of waste management operations.

2.1.1 Landfill Function

The ICDF landfill is a low-level, hazardous, mixed waste disposal facility with a capacity of approximately 390,000 m³ (510,000 yd³). The landfill cells will provide waste disposal capacity for CERCLA-generated contaminated bulk soil, debris (rubble, concrete, wood, personal protective equipment, and metals), and treated waste that are generated at the INEEL and meet the agency-approved WAC for the ICDF.

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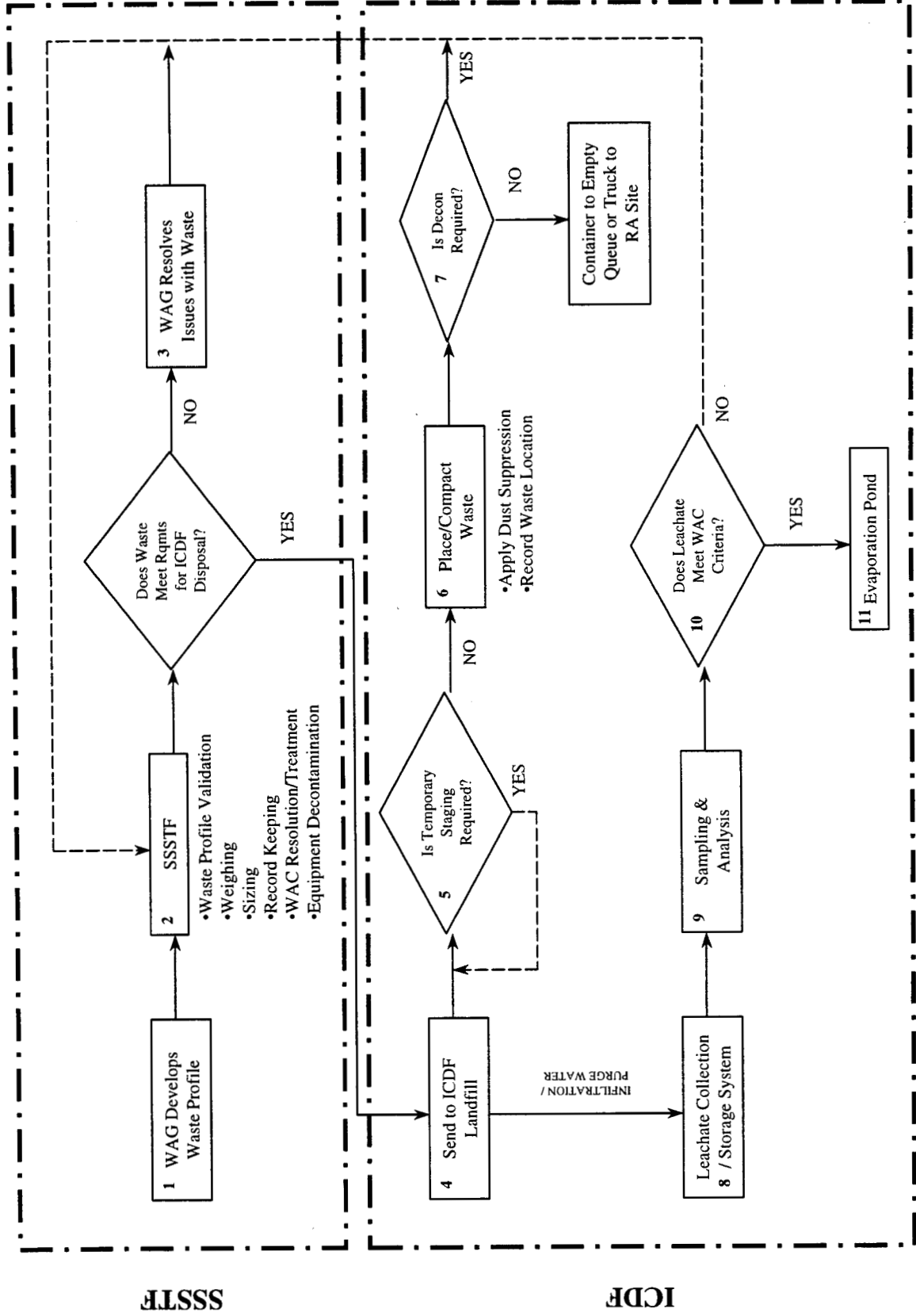


Figure 2 ' ' Block flow diagram for the ICDF.

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2.1.2 Evaporation Pond Function

The evaporation pond will provide treatment/disposal capability for CERCLA-generated aqueous wastes. It will provide evaporative capacity for ICDF landfill leachate, stormwater runoff from the treatment facility, and SSSTF process effluent.

2.1.3 Leachate Collection System Function

This system collects and transfers leachate to the evaporation pond and provides leak detection by measuring the amount of leachate that passes through the primary liner to the secondary liner.

2.1.4 Landfill Cap Function

A final composite cover will be constructed over the landfill that will minimize infiltration, function with minimum maintenance, promote drainage and minimize erosion, and prevent access to the contaminated wastes underneath.

2.2 INEEL CERCLA Disposal Facility Categorization

A preliminary hazard categorization has been completed that identifies the ICDF as a Category 3 Nuclear Facility.

2.3 Operational Overview

Waste arriving at the ICDF landfill will have already passed through the SSSTF for waste profile and WAC verification. The waste will arrive in various forms and sizes that will include, but is not limited to, soil, boxes, bags, crushed drums, tanks, and piping. A dozer located in the landfill will then spread and compact the waste material to maintain a 3:1 slope. A "clean" surface area shall always remain on the top surface of the landfill where the various trucks back up to dispose of the waste. At the end of every shift (daily) a stabilization agent will be applied to the contaminated waste in the landfill that will act as a dust suppression agent.

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3. REQUIREMENTS AND BASES

3.1 Functional and Performance Requirements

3.1.1 ICDF System Level Requirements

Rqmt ID: 001

Rqmt Classification: Safety Significant

Rqmt Text: The ICDF landfill shall be designed and operated to meet the substantive requirements of DOE Order 435.1 for radioactive waste landfill design and operating requirements (Table 3.1.4-1).

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, p. vii

Rqmt ID: 002

Rqmt Classification: Safety Significant

Rqmt Text: The ICDF shall be designed such that cumulative carcinogenic risk is less than or equal to 1×10^{-4} .

Rqmt Basis: Provide human and ecological receptors from being exposed to contamination.

Rqmt Reference: OU 3-13 ROD, Section 11.1.3

Rqmt ID: 003

Rqmt Classification: Mission Critical

Rqmt Text: Operation of the ICDF shall be designed to meet the waste disposal requirements of the INEEL CERCLA program.

Rqmt Basis: Based on the project inventory of INEEL CERCLA waste and any agency-approved updates.

Rqmt Reference: CWID inventory estimate

Rqmt ID: 004

Rqmt Classification: Environmental

Rqmt Text: The ICDF shall accept only INEEL on-Site CERCLA wastes meeting agency-approved ICDF WAC.

Rqmt Basis: Provide for on-Site disposal of CERCLA wastes that will be generated during CERCLA investigative remedial and removal activities. OU 3-13 ROD defines the management of waste from other WAGs at this location.

Rqmt Reference: OU 3-13 ROD, p. vi

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3.1.2 ICDF Major Function Requirements

3.1.2.1 Landfill Area

Rqmt ID: 005

Rqmt Classification: Safety Significant

Rqmt Text: The landfill shall be designed to be protective of the SRPA such that groundwater does not exceed a cumulative carcinogenic risk of 1×10^{-4} , a total HI of 1, or applicable State of Idaho groundwater quality standards (i.e., MCLs).

Rqmt Basis: To provide human and ecological receptors from being exposed to contamination.

Rqmt Reference: OU 3-13 ROD, p. 8-3

Rqmt ID: 006

Rqmt Classification: Safety Significant

Rqmt Text: The ICDF Complex shall be closed and capped to prevent exposure of the public to a cumulative carcinogenic risk of 1×10^{-4} and a total HI of 1.

Rqmt Basis: To provide human and ecological receptors from being exposed to contamination.

Rqmt Reference: OU 3-13 ROD, p. 8-3

Rqmt ID: 007

Rqmt Classification: Safety Significant

Rqmt Text: The ICDF landfill area shall be designed to only accept waste ≤ 10 nCi/g TRU constituents.

Rqmt Basis: To provide for protection of the SRPA from unacceptable risk.

Rqmt Reference: OU 3-13 ROD, Appendix A, comment response #226

Rqmt ID: 008

Rqmt Classification: Mission Critical

Rqmt Text: The ICDF landfill shall have a total capacity of approximately 390,000 m³ (510,000 yd³).

Rqmt Basis: Based on the projected inventory of INEEL CERCLA waste used to develop the OU 3-13 ROD.

Rqmt Reference: OU 3-13 ROD, p. vi

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3.1.2.2 Evaporation Pond Area

Rqmt ID: 009

Rqmt Classification: Mission Critical

Rqmt Text: The evaporation pond shall consist of two individual cells.

Rqmt Basis: Based on the need to perform maintenance activities on cells.

Rqmt Reference: DOE Order 4330.4B

3.1.2.3 Leachate System Area

Rqmt ID: 010

Rqmt Classification: Safety Significant

Rqmt Text: The leachate system shall utilize a double liner leachate collection/detection liner system.

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, p. 11-18

3.1.2.4 Landfill Cap Area

Rqmt ID: 011

Rqmt Classification: Safety Significant

Rqmt Text: The ICDF closure and post-closure shall minimize subsidence of the landfill and its final cover.

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, p. 11-18

Rqmt ID: 012

Rqmt Classification: Mission Critical

Rqmt Text: The cap will be designed to minimize infiltration and run-on and maximize run-off.

Rqmt Basis: Based on the need to limit infiltration into the SRPA.

Rqmt Reference: OU 3-13 ROD, p. 11-18

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Rqmt ID: 013

Rqmt Classification: Mission Critical

Rqmt Text: The cover shall be designed to protect against inadvertent intrusion for a period of 1,000 years.

Rqmt Basis: Based on the projected operations schedule, decay of contaminants, and protection of the SRPA along with future surface risk to human and ecological receptors.

Rqmt Reference: OU 3-13 ROD, pp. 11-15 and 11-18

3.1.3 Boundaries and Interfaces

Rqmt ID: 014

Rqmt Classification: Environmental

Rqmt Text: All ICDF activities shall take place within the WAG 3 AOC per Figure 1-10 of the OU 3-13 ROD.

Rqmt Basis: To allow flexibility in managing the consolidation and remediation of wastes without triggering LDR and other RCRA requirements.

Rqmt Reference: OU 3-13 ROD, p. 1-12

3.1.4 Codes, Standards, and Regulations

Rqmt ID: 015

Rqmt Classification: Safety Significant

Rqmt Text: The ICDF shall be constructed and operated in accordance with the substantive requirements of applicable regulations as defined in Table 3.1.4-1, ICDF regulatory references.

Rqmt Basis: The ROD requires facility construction and operation to be in accordance with applicable codes and regulations.

Rqmt Reference: OU 3-13 ROD, Table 12-3

Rqmt ID: 016

Rqmt Classification: Other

Rqmt Text: The ICDF shall be designed in accordance with the substantive requirements of other design standards as defined in Table 3.1.4-2, Other design standards.

Rqmt Basis: Required by contract with the DOE.

Rqmt Reference: BBWI Management and Operations Contract for the INEEL

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Table 3.1.4-1. ICDF regulatory references.

ARAR Citation	Description	Compliance Reference
IDAPA 58.01.01.650, 58.01.01.651	Idaho fugitive dust emissions	DOE/ID-10851
IDAPA 58.01.01.585, 58.01.01.586	Rules for the control of air pollution in Idaho	EDF-ER-315
40 CFR 61.92, 40 CFR 61.93	NESHAPs for radionuclides from DOE facilities, emission monitoring and emission compliance	EDF-ER-290
40 CFR 122.26	Storm water discharges during construction	PLN-962
IDAPA 58.01.05.008 [40 CFR 264.14(a), (b), and (c)]	Site security	DOE/ID-10852 DOE/ID-10889, Section 2.1.1.4
IDAPA 58.01.05.008 [40 CFR 264.15(a), (c)]	General inspection requirements	DOE/ID-10958, Appendix B
IDAPA 58.01.05.008 [40 CFR 264.16(a)(1),(c)]	Personnel training	INEEL/EXT-01-01318
IDAPA 58.01.05.008 (40 CFR 264.92)	Groundwater protection standard	DOE/ID-10955, Section 1.2
IDAPA 58.01.05.008 (40 CFR 264.93)	Hazardous constituents	DOE/ID-10955, Section 1.2
IDAPA 58.01.05.008 (40 CFR 264.95)	Point of compliance	DOE/ID-10955, Section 1.2.1
IDAPA 58.01.05.008 (40 CFR 264.97)	General groundwater monitoring requirements	DOE/ID-10955, Section 4
IDAPA 58.01.05.008 (40 CFR 264.98)	Detection monitoring program	DOE/ID-10955, Sections 1.2.1 and 1.2.2
IDAPA 58.01.05.008 (40 CFR 264.114)	Disposal and decontamination of equipment, structures, and soils	DOE/ID-10852, DOE/ID-10889, Section 4.13

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Table 3.1.4-1. (continued).

ARAR Citation	Description	Compliance Reference
IDAPA 58.01.05.008 (40 CFR 264.301)	Landfill design and operating requirements	EDF-ER-277, EDF-ER-267
IDAPA 58.01.05.008 [40 CFR 264.309(a) and (b)]	Surveying and recordkeeping	EDF-ER-286, DOE/ID-10881, DOE/ID-10852
IDAPA 58.01.05.008 [40 CFR 264.310(a)(1)(2)(3)(4)(5)]	Landfill closure requirements	DOE/ID-10848
IDAPA 58.01.05.008 [40 CFR 264.310(b)(1)(4)(5)(6)]	Landfill post-closure requirements	DOE/ID-10848
IDAPA 58.01.05.008 [40 CFR 264.18(a) and (b)]	Landfill location standards	EDF-1548 in DOE/ID-10825
IDAPA 58.01.05.008 (40 CFR 264.302)	Landfill action leakage rate	EDF-ER-280, DOE/ID-10852
IDAPA 58.01.05.008 (40 CFR 264.553)	Temporary units	DOE/ID-10852
IDAPA 58.01.05.008 (40 CFR 264.554)	Remediation waste staging piles	DOE/ID-10852
40 CFR 761.75(b)(1)(2)	PCB landfill design requirements	DOE/ID-10848
40 CFR 761.79(a) and (b)	PCB container and moveable equipment decontamination requirements	DOE/ID-10852
IDAPA 58.01.05.008 (40 CFR 264.192)	Design and installation of new tank systems or components	SSSTF issue only
IDAPA 58.01.05.008 (40 CFR 264.601)	Miscellaneous units environmental performance standards	NA – There are no Miscellaneous Units associated with the ICDF Complex at this time.

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Table 3.1.4-1. (continued).

ARAR Citation	Description	Compliance Reference
IDAPA 58.01.05.008 (40 CFR 264, Subpart I)	Use and management of containers	DOE/ID-10958, Section 4
IDAPA 58.01.05.008 (40 CFR 264, Subpart DD)	Containment buildings	SSSTF issue only—DOE/ID-10889, Section 3.3.1.1
IDAPA 58.01.05.008 (40 CFR 264.1052 through 1062)	Air emissions standards for equipment leaks	NA – No organics > 10% by weight
IDAPA 58.01.05.008 (40 CFR 264.1082 through 1088)	Air emissions standards for tanks, surface impoundments, and containers	NA – 264.1080(b)(3) CERCLA site
IDAPA 58.01.05.008 (40 CFR 264.221, .222 through .232)	Surface impoundment design and operating requirements	EDF-ER-271, DOE/ID-10852
IDAPA 58.01.05.008 (40 CFR 264.552)	Corrective action management units (CAMUs)	DOE/ID-10852
IDAPA 58.01.05.006 [40 CFR 262.34(a)(1)]	Hazardous waste accumulation time	DOE/ID-10958, SSSTF Plan
IDAPA 58.01.05.008 (40 CFR 264, Subpart F)	Releases from solid waste management units	DOE/ID-10955
IDAPA 58.01.05.008 (40 CFR 264, Subpart G)	Closure and post-closure	DOE/ID-10848
Chemical-specific		
IDAPA 58.01.05.005 (40 CFR 261.20 through .24)	Hazardous waste characteristics identification	DOE/ID-10958, Section 3.2; DOE/ID-10960; DOE/ID-10881, Section 2

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Table 3.1.4-1. (continued).

ARAR Citation	Description	Compliance Reference
<i>Location-specific</i>		
16 USC 469 et seq. 36 CFR 65	National Archeological and Historical Preservation Act	INEEL-00-018, R1, Environmental Checklist
25 USC 3001	Native American Graves Protection and Repatriation Act	INEEL-00-018, R1, Environmental Checklist
<i>TBCs</i>		
DOE Order 435.1	Radioactive waste management performance objectives to protect workers	EDF-ER-327
DOE Order 5400.5	Exposures to the public will be kept ALARA	EDF-ER-327
<i>Action-specific</i>		
IDAPA 58.01.05.011 (40 CFR 268)	Land disposal restrictions	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866
IDAPA 58.01.05.011 (40 CFR 268.49)	Alternative land disposal restrictions treatment standards for contaminated soil	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866
<i>Chemical-specific</i>		
IDAPA 58.01.05.005 (40 CFR 261)	Identification and listing of hazardous waste	DOE/ID-10960; DOE/ID-10881, Section 2; DOE/ID-10958, Section 3.2
IDAPA 58.01.05.006 (40 CFR 262.11)	Hazardous waste determination	DOE/ID-10960; DOE/ID-10881, Section 2; DOE/ID-10958, Section 3.2
40 CFR 761.50(a)(5)	PCB disposal requirements	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866
40 CFR 761.50(b)(3)	PCB remediation waste	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866

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Table 3.1.4-1. (continued).

ARAR Citation	Description	Compliance Reference
40 CFR 761.50(b)(7)	PCB radioactive waste	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866
40 CFR 761.50(b)(8)	Porous surfaces	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866
40 CFR 761.50(d)(4)	Disposal requirements for PCBs	DOE/ID-10881, DOE/ID-10865, DOE/ID-10866
<i>Location-specific</i>		
None		
<i>TBCs</i>		
DOE Order 435.1	Radioactive waste management performance objectives to protect workers	EDF-ER-327
DOE Order 5400.5	Exposures to the public will be kept ALARA	EDF-ER-327

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Table 3.1.4-2. Other design standards.

Alternative/ ARAR Citation	Description	Applies To	Imposed By
DOE Order 435.1	Radioactive waste management performance objectives to protect workers	Worker protection	OU 3-13 ROD, pg. 12-17
DOE Order 5400.5	Exposures to the public will be kept ALARA	Exposures to the public and workers	OU 3-13 ROD, pg. 12-17
10 CFR 835	Occupational radiation protection	Workers	OU 3-13 ROD, pg. 11-15
40 CFR 300.440	Off-Site rule	Waste locations	FFA/CO, Section 16
QAMS – 005/80	Quality assurance	Waste acceptance	DOE Contract
DOE-ID Architectural Engineering Standards		Construction	DOE Contract
29 CFR 1910.120 and 29 CFR 1926.65	OSHA hazardous waste operations & emergency response	Worker protection and construction standards	DOE Contract
ASME NQA-1-1997	Quality assurance requirements for nuclear facility application	Design, construction, installation, testing, & operation of facility	DOE Contract
10 CFR 830.120	Quality assurance requirements	Design, construction, installation, testing, & operation of facility	DOE Contract
DOE Order 420.1	Facility safety	Design and personnel protection	DOE Contract
DOE Order 440.1A	Worker protection management for DOE federal and contractor employees	Personnel protection	DOE Contract
10 CFR 835	Occupational radiation protection	Design and personnel protection	DOE Contract
BBWI Companywide Manuals 15A, 15B, and 15C	Radiation protection & control procedures and supplements	Design and personnel protection	DOE Contract

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Table 3.1.4-2. (continued).

Alternative/ ARAR Citation	Description	Applies To	Imposed By
40 CFR 264.19	CQA Program	Landfill and evaporation pond construction	OU 3-13 ROD, pg. vi
40 CFR 300.435(b)	RD/RA activities	Design, construction, installation, testing, & operation of facility	National Contingency Plan (NCP)

3.1.5 Operability

Rqmt ID: 017

Rqmt Classification: Mission Critical

Rqmt Text: The ICDF shall be designed to routinely perform waste placement in yearly campaigns that run from March to November; however, the SSSTF will remain in operation the remainder of the year.

Rqmt Basis: To reduce the complexity associated with operating through winter months.

Rqmt Reference: Table 1.4, Assumption J

Rqmt ID: 018

Rqmt Classification: Mission Critical

Rqmt Text: The ICDF shall be designed to allow operating on a 10-hour shift, four days per week.

Rqmt Basis: To reduce operational complexity by maintaining compatibility with other Site operations.

Rqmt Reference: Table 1.4, Assumption J

Rqmt ID: 019

Rqmt Classification: Mission Critical

Rqmt Text: The ICDF shall be designed for year-round waste monitoring and management operations.

Rqmt Basis: To support expected operational needs.

Rqmt Reference: Table 1.4, Assumption S

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3.2 Special Requirements

3.2.1 Radiation and Other Hazards

Radiation and Other Hazard requirements are defined in regulations imposed in Table 3.1.4-2.

3.2.2 ALARA

Rqmt ID: 020

Rqmt Classification: Safety Significant

Rqmt Text: Permanent markers shall be installed at all corner boundaries for each cell of the landfill that identify the potential exposure hazards.

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, pp. 8-9

3.2.3 Nuclear Criticality Safety

Not Applicable based on the ICDF classification of "Non-nuclear, Radiological."

3.2.4 Industrial Hazards

Industrial Hazards requirements are defined in regulations imposed in Table 3.1.4-2.

3.2.5 Operating Environment and Natural Phenomena

Rqmt ID: 021

Rqmt Classification: Safety Significant

Rqmt Text: With respect to natural phenomena hazards (NPH) (seismic, wind, and flood), the ICDF shall be categorized as Performance Category PC-1 as defined by DOE-STD-1020 and -1021.

Rqmt Basis: Required constraint for a facility where NPH-caused failure could result in loss of function for hazardous material recovery, as well as possible release of radioactive and toxic materials. PC-1 (EDF-1548) will be defined as a result of work performed in an EDF. See Table 1.3-1 in the SSSTF Conceptual Design Report.

Rqmt Reference: DOE-STD-1020 and 1021

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Rqmt ID: 022

Rqmt Classification: Environmental

Rqmt Text: The ICDF shall be constructed outside of wetland areas, not in an active seismic zone, not in an area of high surface erosion, and not in an area of high historic groundwater table.

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, p. vii

Rqmt ID: 023

Rqmt Classification: Environmental

Rqmt Text: The ICDF shall be constructed within the AOC and outside of the 100-year floodplain.

Rqmt Basis: The ROD stipulates that the ICDF landfill will be located outside of the 100-year floodplain.

Rqmt Reference: OU 3-13 ROD, p. 11-18, Figure 5-1, p. 5-2

3.2.6 Human Interface Requirements

No human interface requirements have been identified.

3.2.7 Specific Commitments

Rqmt ID: 024

Rqmt Classification: Safety Significant

Rqmt Text: Permanent land use restrictions, zoning restrictions, and deed restrictions shall be placed on the ICDF and its adjacent buffer zone to permanently preclude industrial or residential development until unacceptable risk no longer remains at the site.

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, p. 8-9

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3.3 Engineering Design Requirements

3.3.1 Civil and Structural

Rqmt ID: 025

Rqmt Classification: Safety Significant

Rqmt Text: A 100-m (328-ft) buffer zone shall be maintained as part of the exclusion area around the capped area.

Rqmt Basis: This is a ROD-driven requirement.

Rqmt Reference: OU 3-13 ROD, p. 11-32.

Rqmt ID: 026

Rqmt Classification: Other

Rqmt Text: The ICDF shall be equipped with fire water for fire hydrants.

Rqmt Basis: To support typical operations.

Rqmt Reference: Table 1.6, Assumption P

Rqmt ID: 027

Rqmt Classification: Other

Rqmt Text: The ICDF shall be equipped with fire alarm, voice paging, and evacuation system.

Rqmt Basis: To support typical operations.

Rqmt Reference: Table 1.6, Assumption P

Rqmt ID: 028

Rqmt Classification: Other

Rqmt Text: The ICDF shall be equipped with electrical power capabilities.

Rqmt Basis: To support typical operations.

Rqmt Reference: Table 1.6, Assumption P

3.3.2 Mechanical and Materials

No additional mechanical and materials requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

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3.3.3 Chemical and Process

No additional chemical and process requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.3.4 Electrical Power

No additional electrical power requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.3.5 Instrumentation and Control

No additional instrumentation and control requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.3.6 Computer Hardware and Software

No computer hardware and software requirements have been identified.

3.3.7 Fire Protection

No additional fire protection requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.4 Testing and Maintenance Requirements

3.4.1 Testability

No testability requirements have been identified.

3.4.2 Technical Safety Requirement (TSR)-Related Surveillances

No TSR-related surveillance requirements have been identified.

3.4.3 Non-TSR Inspections and Testing

No Non-TSR inspections and testing requirements have been identified.

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3.4.4 Maintenance

Rqmt ID: 029

Rqmt Classification: Other Safety

Rqmt Text: The pump(s) for the leachate collection system shall be accessible for maintenance or replacement.

Rqmt Basis: This requirement is based on the need for immediate and easy access to equipment to facilitate safe maintenance.

Rqmt Reference: DOE Order 4330.4B

Rqmt ID: 030

Rqmt Classification: Other Safety

Rqmt Text: A safety system shall be designed that facilitates maintenance activities in the evaporation pond.

Rqmt Basis: This requirement is based on the need for a safety system due to the exposed liner creating slippery conditions for workers maintaining the evaporation pond.

Rqmt Reference: DOE Order 4330.4B

3.5 Other Requirements

3.5.1 Security and SNM Protection

Security requirements are defined in regulations imposed in Table 3.1.4-2.

3.5.2 Special Installation Requirements

No special installation requirements have been identified.

3.5.3 Reliability, Availability, and Preferred Failure Modes

No reliability, availability, and preferred failure mode requirements have been identified.

3.5.4 Quality Assurance

No additional quality assurance requirements to those imposed by DOE-ID Architectural Engineering Standards and applicable regulations have been identified. See Table 3.1.4-2 for imposed quality assurance regulations.

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3.5.5 Miscellaneous

No miscellaneous requirements have been identified.